IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant: Jill MacDonald Boyce

Examiner: Thompson, J.

Serial No: 10/559,643

Group Art Unit: 2625

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Docket: PU040104

For: DECODING METHOD AND APPARATUS ENABLING FAST CHANNEL CHANGE OF COMPRESSED VIDEO

Mail Stop Appeal Brief-Patents
Hon. Commissioner for Patents
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APPEAL BRIEF

Applicants appeal the status of Claims 1-11 as presented in response to a non-final Office Action dated July 29, 2010, rejected in a final Office Action dated October 4, 2010, rejected in a non-final Office Action dated December 27, 2010, and rejected in a non-final Office Action dated May 3, 2011, pursuant to the Notice of Appeal filed concurrently herewith and submit this appeal brief. A petition for extending the time for a response within the first month after the original response date and payment of the required fee of one hundred thirty dollars ($130.00) is also concurrently submitted, and therefore the concurrently filed Notice of Appeal is believed to be timely. Appellants reinstate the appeal in accordance with 37 CFR 41.31 in response to the Rejection, dated May 3, 2011, of claims 1-11 of the above-identified application. The fee of five hundred forty dollars ($540.00) for filing this Brief pursuant to 37 CFR 41.20(b)(2) has already been applied in the previous appeal. The fee of five hundred forty dollars ($540.00) for filing the concurrently filed Notice of Apeal has also already been applied in the previous Notice of Appeal. No additional fee is believed due with this response. However, please charge any additional fee or credit any overpayment to Deposit Account 07-0832. Appellants do not request an oral hearing.

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1. Real Party in Interest

The real party in interest is THOMSON LICENSING, the assignee of the entire right title and interest in and to the subject application by virtue of an assignment recorded with the Patent Office on December 21, 2005 at reel/frame 017326/0550.

2. Related Appeals and Interferences

Regarding another application, namely U.S. Patent Application No. 10/560,477 (hereinafter the "'477 Application"), an Appeal (having Appeal Number 2011-011145) is currently pending there for. In the prosecution of the '477 Application, a Notice of Appeal and a corresponding Appeal Brief were filed on January 7, 2011, appealing from a final Office Action dated November 18, 2010 and a non-final Office Action dated September 21, 2010 (i.e., twice rejected).

In the instant application, the Applicants had previously filed a Notice of Appeal and an Appeal Brief concurrently on February 21, 2011, but the prosecution of the instant application was reopened by the Office Action mailed on May 3, 2011.

3. Status of Claims

Claims 1-11 are pending, stand rejected, and are under appeal. A copy of the Claims 1-11 is presented in Section 8 below.

4. Status of Amendments

A Preliminary Amendment under 37 CFR §1.115, mailed to the PTO on December 2, 2005, was entered. An amendment under 37 CFR §1.111, mailed to the PTO on September 28, 2010 in response to a non-final Office Action dated July 29, 2010, was entered. An amendment and Request for Continued Examination (RCE) under 37 CFR §1.114, mailed to the PTO on November 2, 2010 in response to a non-final Office Action dated October 4, 2010, was entered. A Notice of Appeal and corresponding Appeal Brief, mailed to the PTO on February 21, 2011 in response to a non-final Office Action dated December 27, 2010, were entered. A non-final Office Action dated May 3, 2011 re-opened prosecution and is currently pending, to which this Appeal Brief is directed.

5. Summary of Claimed Subject Matter

Independent Claim 1 is directed to "[a] video decoder for receiving compressed stream data and providing decompressed video output" (Claim 1, preamble).

The subject matter of the first element (beginning with "a demultiplexor") recited in Claim 1 is described, e.g., at: page 5, lines 5-19; and page 12, line 32 to page 13, line 3. Moreover, the subject matter of the first element of Claim 1 involves, e.g.: element 710 of FIG. 7.

The subject matter of the second element (beginning with "a normal decoding portion") recited in Claim 1 is described, e.g., at: page 12, line 32 to page 13, line 5. Moreover, the subject matter of the second element of Claim 1 involves, e.g.: element 712 of FIG. 7.

The subject matter of the third element (beginning with "at least one normal frame store") recited in Claim 1 is described, e.g., at: page 13, lines 3-5. Moreover, the subject matter of the third element of Claim 1 involves, e.g.: element 714 of FIG. 7.

Independent Claim 10 is directed to "[i]n a video decoder, a video decoding method for receiving compressed stream data and providing decompressed video output" (Claim 10, preamble).

The subject matter of the first element (beginning with "receiving the compressed stream data") recited in Claim 10 is described, e.g., at: page 13, lines 28-31. Moreover, the subject matter of the first element of Claim 10 involves, e.g.: elements 912 and 914 of FIG. 9.

The subject matter of the second element (beginning with "receiving at least one of the compressed normal and channel change streams") recited in Claim 10 is described, e.g., at: page 13, line 31 to page 14, line 1. Moreover, the subject matter of the second element of Claim 10

involves, e.g.: element 916 of FIG. 9.

The subject matter of the third element (beginning with "storing") recited in Claim 10 is described, e.g., at: page 13, lines 1-3. Moreover, the subject matter of the third element of Claim 10 involves, e.g.: element 918 of FIG. 8.

6. Grounds of Rejection to be Reviewed on Appeal

Claims 1, 4, 6-8, 10, and 11 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Pub. No. 2004/0194134 to Gunatilake et al. (hereinafter "Gunatilake").

Claims 2 and 5 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gunatilake in view of U.S. Patent No. 7,143,432 to Brooks et al. (hereinafter "Brooks").

Claim 3 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gunatilake in view of U.S. Patent No. 7,675,972 to Laksono et al. (hereinafter "Laksono").

Claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Gunatilake in view of U.S. Patent No. 6,118,498 to Reitmeier (hereinafter "Reitmeier").

The preceding rejections are presented for review in this Appeal.

7. Argument

A. Introduction

In general, the present invention is directed to a decoding method and apparatus enabling fast channel change of compressed video (Applicant's Specification, Title). As disclosed in the Applicant's specification, the present invention is directed to the problem of channel change delay. For example, as noted at page 1, lines 24-26 of the Applicant's specification: "[w]hen a receiver initially begins receiving a program on a particular channel, such as following a channel change or initial turning on of the receiver, it must wait until an I picture is received to begin decoding properly, which causes a delay."

In contrast to the prior art, "the invention enables low delay channel change time in a compressed video broadcast system, while significantly reducing the bitrate over prior methods of enabling low-delay channel change" (Applications' specification, p. 4, lines 26-29).

The claims of the pending invention include novel features not shown in the cited references and that have already been pointed out to the Examiner. These features provide advantages over the prior art and dispense with prior art problems such as undue channel change delay (Applicant's specification, p. 4, lines 16-29).

It is respectfully asserted that Claims 1 and 10 are each patentably distinct and non-obvious over the cited references in their own right. For example, the below-identified limitations of Claims 1 and 10 are not shown in the cited reference. Moreover, these Claims are distinct from each other in that they are directed to different implementations and/or include different limitations. For example, Claim 1 is directed to a video decoder, and Claim 10 is directed to a video decoding method (Claims 1 and 10, preambles). Accordingly, each of Claims

1 and 10 represent separate features/implementations of the invention that are separately novel and non-obvious with respect to the prior art and to the other claims. As such, Claims 1 and 10 are separately patentable and are each presented for review in this appeal.

B. Whether Claims 1, 4, 6-8, 10, and 11 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Pub. No. 2004/0194134 to Gunatilake et al.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP §2131, citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

The Examiner rejected Claims 1, 4, 6-8, 10, and 11 as being unpatentable over by U.S. Patent Pub. No. 2004/0194134 to Gunatilake et al. (hereinafter "Gunatilake" in short). The Examiner contends that Gunatilake shows all the limitations recited in Claims 1, 4, 6-8, 10, and 11.

Gunatilake is directed to a "method and system for rapid channel change providing stored images of current channel programs" (Gunatilake, Title). In further detail, Gunatilake discloses in the abstract, the following:

> Disclosed is a method for changing channels in a digital television transport stream, which comprises accessing the digital television transport stream, itself comprising a plurality of multiplexed channels, by using a first tuner, displaying a first program channel from the digital television transport stream, detecting and storing in a buffer memory recent video data from a second

channel while displaying the first channel by using a second tuner, immediately recalling and presenting a complete video frame from the stored video data of the second channel for display when the second channel is selected by the user, and displaying real-time video from the second channel when decodable real-time video data is available from the transport stream.

It will be shown that the limitations of Claims 1, 4, 6-8, 10, and 11 reproduced herein are not taught or suggested by the cited references (alone or in combination), and that such Claims should be allowed including those dependent there from.

B1. Claims 1, 4, 6-8, 10, and 11

Initially, it is respectfully noted that Claims 1, 4, and 6-8 directly or indirectly depend from independent Claim 1, and Claim 11 directly depends from independent Claim 10. Thus, Claims 1, 4, and 6-8 include all the limitations of Claim 1, and Claim 11 includes all the limitations of independent Claim 10.

It is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claims 1, 4, and 6-8 (with the following applicable to Claims 4 and 6-8 by virtue of their respective dependencies from Claim 1):

1. A video decoder for receiving compressed stream data and providing decompressed video output, the decoder comprising:

a demultiplexor for receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program;

a normal decoding portion in direct signal communication with the demultiplexor for selectably receiving at least one of the compressed normal and channel change streams, and providing decompressed video output; and

at least one normal frame store in signal communication with the normal decoding portion for storing reference pictures for use in decoding inter-coded pictures.

Moreover, it is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claims 10-11 (with the following applicable to Claim 11 by virtue of its respective dependency from Claim 10):

10. In a video decoder, a video decoding method for receiving compressed stream data and providing decompressed video output, the method comprising:

receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program;

receiving at least one of the compressed normal and channel change streams, and providing decompressed video output; and

storing reference pictures for use in decoding inter-coded pictures.

Initially, we will focus on the following language recited in Claims 1, 4, 6-8, 10, and 11: "receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the

video decoder and comprising a plurality of pictures for a same program". Against the preceding limitations of Claims 1, 4, 6-8, 10, and 11, the Examiner cited elements 304, 301, 302, and 309 in figure 3 of Gunatilake as well as paragraph [0036], lines 3-10 and 13-14, and paragraph [0038]. We respectfully disagree with the Examiner's reading of Gunatilake and subsequent application of the same to the pending claims.

Paragraph [0036] of Gunatilake discloses the following in its entirety:

> FIG. 3 illustrates, in block diagram form, a receiver system in accordance to an embodiment of the present invention. There, channel cache architecture 300 is characterized by receiving a television signal, 301, containing encoded, multiplexed, digital television programming. It is noted here that a received signal containing digital television programming may be a broadcast radio frequency (RF) signal, a cable signal, or any other signal arriving from anywhere other than internally to the receiver involved in this embodiment of the present invention. The input signal is received by a tuner 302 if RF or otherwise appropriately accessed and digital transport stream 303 is separated out. The desired program channel is demultiplexed and decoded at 304 and sent to display 106. In this embodiment, a second tuner, 305, also separates out a digital transport stream 303. It is noted here that, in some embodiments of the present invention, the functions of tuners 302 and 305 can be switched, do that either tuner may be the "watched" tuner and the other may be the "unused" tuner. In other embodiments, there can be more tuners which can also be either "watched" or "unused" tuners.

Paragraph [0038] of Gunatilake discloses the following in its entirety:

> At the same time the new full video frame still image is obtained from cache i and sent to the display, channel change and cache manager 309, via command and control 310, instructs MPEG decoder 304 to begin decoding real-time video for the newly selected program channel i in transport stream 303. If the user remains tuned to the newly selected channel i, real-time video is then displayed immediately as soon as full-frame, real-time video is available. Using this method, the user can immediately see, by viewing the full video frame still image (which is characteristic of the current programming), whether the newly selected program channel is one he or she may want to view without having to wait for real-time video decoding to commence, which can take several seconds to occur. Moreover, the still image obtained from the cache 315 may function adequately for surfing purposes where a decision to view or not may be made from the stored still image.

Before specifically addressing the preceding portions of Gunatilake, we provide a brief overview of Gunatilake in order to show the disparities between the approach of Gunatilake with respect to the inventions represented by Claims 1, 4, 6-8, 10, and 11.

Gunatilake is directed to "a method for changing channels in a digital television transport stream, which comprises accessing the digital television transport stream, itself comprising a plurality of multiplexed channels" (Gunatilake, abstract). To that end, Gunatilake discloses a system that includes, *inter alia*, multiple demultiplexers (see, e.g., Gunatilake, FIG. 3, elements 302 and 305) and multiple tuners (see, e.g., Gunatilake, FIG. 3, elements 304 and 307). A first one 302 (i.e., a "watched" tuner) of the tuners tunes to a currently watched program with the attached demux 302 separating the currently watched program from the plurality of multiplexed channels (i.e., multiplexed programs) (see, e.g., Gunatilake, para. [0036]). One or more other tuners 305 (i.e.,

"unused" tuners) periodically scan the transport stream for video data in each program channel in conjunction with another demultiplexer 307 attached thereto, with such video data forming I-frames of unwatched programs that are stored in a memory 315 (having a separate buffer for each channel in the transport stream). The stored I-frame for a given program is then displayed to a user upon the user providing a channel change command for the given program (see, e.g., Gunatilake, para. [0038]). "Using this method, the user can immediately see, by viewing the full video frame still image (which is characteristic of the ... [newly requested programming] programming), whether the newly selected program channel is one he or she may want to view without having to wait for real-time video decoding to commence, which can take several seconds to occur" (Gunatilake, para. [0038]).

Hence, in direct contrast to the explicit limitations in Claims 1, 4, 6-8, 10, and 11, it is clear that the system of Gunatilake does NOT separate a normal stream and a channel change stream from a compressed data stream, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program. Rather, Gunatilake separates different channel streams from a transport stream, where each channel stream corresponds to a different program (see, e.g., Gunatilake, para. [0034], disclosing "[e]ach time step 230 is entered, the second video channel tuner selects a new program"). We note that the preceding recited separating of the normal stream and the channel change stream from the compressed data stream clearly pre-supposes that both the normal stream and the channel change stream are contained within the compressed data stream, which is not taught nor suggested by Gunatilake who instead teaches away from the same.

Accordingly, not only does Gunatilake fail to teach or suggest "separating a normal stream and a channel change stream from a compressed data stream, the normal stream and the channel change … comprising a plurality of pictures for a same program" as explicitly recited in Claims 1, 4, 6-8, 10, and 11, Gunatilake also fails to teach or suggest receiving a compressed stream data that includes both a normal stream and a channel change stream. In fact, it is readily clear to one of ordinary skill in the art that Gunatilake has no need for a compressed data stream having a normal stream and a channel change stream that both comprise a plurality of pictures for a same program, in contrast to the explicit limitations of Claims 1, 4, 6-8, 10, and 11, since the system of Gunatilake exploits the different pictures that correspond to different programs in order to provide the user a way to quickly assess the content of a different program not currently being viewed using a pre-stored I-frame for that different program.

Also, we note that Claims 1, 4, and 6-8 recite a (single) "multiplexer for receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program" (emphasis added). In contrast, while Gunatilake discloses multiple demultiplexers (304 and 307), none of the demultiplexers disclosed in Gunatilake ever separate a normal stream and a channel change stream from compressed stream data provided to such multiplexers.

Further, we note that as per MPEP 2111.02(I), "[a]ny terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation". To that end, we note that Claims 10 and 11 recite, *inter alia*, "[i]n a video decoder, a video decoding method … comprising". Hence, the receiving and separating recited in Claims 10 and 11 are performed within

a video decoder. The Examiner has cited channel cache 315 in Figure 3 of Gunatilake against the same. However, the channel cache 315 is not within a video decoder, but rather is external to decode unit 304 in Figure 3 of Gunatilake, hence failing to meet this explicit limitation of Claims 10 and 11.

Also, noting again that Claims 1, 4, and 6-8 are explicitly directed to a video decoder, and Claims 10-11 are explicitly directed to a method in a video decoder, we further note that Claims 1, 4, and 6-8 explicitly recite, *inter alia*, "at least one normal frame store in signal communication with the normal decoding portion for storing reference pictures for use in decoding inter-coded pictures" and Claims 10-11 explicitly recite, *inter alia*, "storing reference pictures for use in decoding inter-coded pictures". However, in direct contrast to the preceding explicit limitations of Claims 1, 4, 6-8, 10 and 11, Gunatilake discloses, as cited by the Examiner, a memory (315) external to the decoder (304) shown in Figure 3 of Gunatilake. Hence, in that regard alone (i.e.., that the memory (315) is external to the decoder 304 and not comprised within a decoder), Gunatilake fails to teach or suggest the preceding limitations of Claims 1, 4, 6-8, and 10-11, instead directly teaching away from the same.

Hence, in all these regards, Gunatilake fails to teach or suggest all the above reproduced limitations of Claims 1, 4, 6-8, and 10-11.

Thus, none of the cited references, either taken singly or in any combination, teach or suggest all of the above reproduced limitations of Claims 1, 4, 6-8, 10, and 11, and a proper *prima facie* anticipation rejection has not been made.

Accordingly, Claims 1, 4, 6-8, 10, and 11 are patentably distinct and non-obvious over the cited references for at least the reasons set forth above. Therefore, reversal of the rejection of

Claims 1, 4, 6-8, 10, and 11 is earnestly requested.

C. Whether Claims 2 and 5 are Unpatentable Under 35 U.S.C. §103(a) by U.S. Patent Pub. No. 2004/0194134 to Gunatilake et al. in view of U.S. Patent No. 7,143,432 to Brooks et al.

The failure of an asserted combination to teach or suggest each and every feature of a claim remains fatal to an obviousness rejection under 35 U.S.C. § 103. Section 2143.03 of the MPEP requires the "consideration" of every claim feature in an obviousness determination. To render a claim unpatentable, however, the Office must do more than merely "consider" each and every feature for this claim. Instead, the asserted combination of the patents must also teach or suggest *each and every claim feature*. *See In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (emphasis added) (to establish *prima facie* obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art). Indeed, as the Board of Patent Appeal and Interferences has recently confirmed, a proper obviousness determination requires that an Examiner make "a searching comparison of the claimed invention - *including all its limitations* - with the teaching of the prior art." *See In re Wada and Murphy*, Appeal 2007-3733, *citing In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis in original). "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious" (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The Examiner rejected Claims 2 and 5 as being unpatentable over by U.S. Patent Pub. No. 2004/0194134 to Gunatilake et al. (hereinafter "Gunatilake" in short) in view of U.S. Patent

No. 7,143,432 to Brooks et al. (hereinafter "Brooks" in short). The Examiner contends that the cited combination shows all the limitations recited in Claims 2 and 5.

Gunatilake is directed to a "method and system for rapid channel change providing stored images of current channel programs" (Gunatilake, Title). In further detail, Gunatilake discloses in the abstract, the following:

> Disclosed is a method for changing channels in a digital television transport stream, which comprises accessing the digital television transport stream, itself comprising a plurality of multiplexed channels, by using a first tuner, displaying a first program channel from the digital television transport stream, detecting and storing in a buffer memory recent video data from a second channel while displaying the first channel by using a second tuner, immediately recalling and presenting a complete video frame from the stored video data of the second channel for display when the second channel is selected by the user, and displaying real-time video from the second channel when decodable real-time video data is available from the transport stream.

Brooks directed to a "system for transforming streaming video data" (Brooks, Title). In further detail, Brooks discloses in the abstract, the following:

> According to one embodiment, a circuit configured to form an output video stream includes a resolution modification circuit configured to receive a plurality of video frames from a frame buffer, and configured to modify resolution of the plurality of video frames, when the desired resolution for the output video stream is different than a resolution of the input video stream, the plurality of frames of data derived from an input video stream, a frame reducing circuit

coupled to the resolution reducing circuit configured to reduce a number of video frames in the plurality of video frames from the resolution reducing circuit, when a desired frame rate for the output video stream is different than a frame rate of the input video stream, a depth reduction circuit coupled to the frame reducing circuit configured to reduce bit depth of the plurality of video frames from the frame reducing circuit, when a desired bit depth for the output video stream is different than a bit depth of the input video stream, and a rate reduction circuit coupled to the depth reduction circuit, configured to scale the plurality of video frames from the depth reduction circuit, in response to a desired bit rate for the output video stream, and an encoder coupled to the rate reduction circuit, configured to encode the plurality of video frames from the rate reduction circuit into the output video stream is also contemplated.

It will be shown that the limitations of Claims 2 and 5 reproduced herein are not taught or suggested by the cited references (alone or in combination), and that such Claims should be allowed including those dependent there from.

C1. Claims 2 and 5

Initially, it is respectfully noted that Claims 2 and 5 directly or indirectly depend from independent Claim 1. Thus, Claims 2 and 5 include all the limitations of Claim 1.

It is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claims 2 and 5 (with the following applicable to Claims 2 and 5 by virtue of their respective dependencies from Claim 1):

1. A video decoder for receiving compressed stream data and providing decompressed video output, the decoder comprising:

a demultiplexor for receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program;

a normal decoding portion in direct signal communication with the demultiplexor for selectably receiving at least one of the compressed normal and channel change streams, and providing decompressed video output; and

at least one normal frame store in signal communication with the normal decoding portion for storing reference pictures for use in decoding inter-coded pictures.

Initially, we will focus on the following language recited in Claims 2 and 5: "receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program". Against the preceding limitations of Claims 2 and 5, the Examiner cited elements 304, 301, 302, and 309 in figure 3 of Gunatilake as well as paragraph [0036], lines 3-10 and 13-14, and paragraph [0038]. We respectfully disagree with the Examiner's reading of Gunatilake and subsequent application of the same to the pending claims.

Paragraph [0036] of Gunatilake discloses the following in its entirety:

FIG. 3 illustrates, in block diagram form, a receiver system in accordance to an embodiment of the present invention. There, channel cache architecture 300 is characterized by receiving a television signal, 301, containing encoded,

multiplexed, digital television programming. It is noted here that a received signal containing digital television programming may be a broadcast radio frequency (RF) signal, a cable signal, or any other signal arriving from anywhere other than internally to the receiver involved in this embodiment of the present invention. The input signal is received by a tuner 302 if RF or otherwise appropriately accessed and digital transport stream 303 is separated out. The desired program channel is demultiplexed and decoded at 304 and sent to display 106. In this embodiment, a second tuner, 305, also separates out a digital transport stream 303. It is noted here that, in some embodiments of the present invention, the functions of tuners 302 and 305 can be switched, do that either tuner may be the "watched" tuner and the other may be the "unused" tuner. In other embodiments, there can be more tuners which can also be either "watched" or "unused" tuners.

Paragraph [0038] of Gunatilake discloses the following in its entirety:

At the same time the new full video frame still image is obtained from cache i and sent to the display, channel change and cache manager 309, via command and control 310, instructs MPEG decoder 304 to begin decoding real-time video for the newly selected program channel i in transport stream 303. If the user remains tuned to the newly selected channel i, real-time video is then displayed immediately as soon as full-frame, real-time video is available. Using this method, the user can immediately see, by viewing the full video frame still image (which is characteristic of the current programming), whether the newly selected program channel is one he or she may want to view without having to wait for real-time video decoding to commence, which can take several seconds to occur. Moreover, the still image obtained from the cache 315 may function adequately for surfing purposes where a decision to view or not may be made from the stored still image.

Before specifically addressing the preceding portions of Gunatilake, we provide a brief overview of Gunatilake in order to show the disparities between the approach of Gunatilake with respect to the inventions represented by Claims 2 and 5.

Gunatilake is directed to "a method for changing channels in a digital television transport stream, which comprises accessing the digital television transport stream, itself comprising a plurality of multiplexed channels" (Gunatilake, abstract). To that end, Gunatilake discloses a system that includes, *inter alia*, multiple demultiplexers (see, e.g., Gunatilake, FIG. 3, elements 302 and 305) and multiple tuners (see, e.g., Gunatilake, FIG. 3, elements 304 and 307). A first one 302 (i.e., a "watched" tuner) of the tuners tunes to a currently watched program with the attached demux 302 separating the currently watched program from the plurality of multiplexed channels (i.e., multiplexed programs) (see, e.g., Gunatilake, para. [0036]). One or more other tuners 305 (i.e., "unused" tuners) periodically scan the transport stream for video data in each program channel in conjunction with another demultiplexer 307 attached thereto, with such video data forming I-frames of unwatched programs that are stored in a memory 315 (having a separate buffer for each channel in the transport stream). The stored I-frame for a given program is then displayed to a user upon the user providing a channel change command for the given program (see, e.g., Gunatilake, para. [0038]). "Using this method, the user can immediately see, by viewing the full video frame still image (which is characteristic of the … [newly requested programming] programming), whether the newly selected program channel is one he or she may want to view without having to wait for real-time video decoding to commence, which can take several seconds to occur" (Gunatilake, para. [0038]).

Hence, in direct contrast to the explicit limitations in Claims 2 and 5, it is clear that the system of Gunatilake does NOT separate a normal stream and a channel change stream from a compressed data stream, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program. Rather, Gunatilake separates different channel streams from a transport stream, where each channel stream corresponds to a different program (see, e.g., Gunatilake, para. [0034], disclosing "[e]ach time step 230 is entered, the second video channel tuner selects a new program"). We note that the preceding recited separating of the normal stream and the channel change stream from the compressed data stream clearly pre-supposes that both the normal stream and the channel change stream are contained within the compressed data stream, which is not taught nor suggested by Gunatilake who instead teaches away from the same.

Accordingly, not only does Gunatilake fail to teach or suggest "separating a normal stream and a channel change stream from a compressed data stream, the normal stream and the channel change … comprising a plurality of pictures for a same program" as explicitly recited in Claims 2 and 5, Gunatilake also fails to teach or suggest receiving a compressed stream data that includes both a normal stream and a channel change stream. In fact, it is readily clear to one of ordinary skill in the art that Gunatilake has no need for a compressed data stream having a normal stream and a channel change stream that both comprise a plurality of pictures for a same program, in contrast to the explicit limitations of Claims 2 and 5, since the system of Gunatilake exploits the different pictures that correspond to different programs in order to provide the user a way to quickly assess the content of a different program not currently being viewed using a pre-stored I-frame for that different program.

In fact, assuming arguendo that the system of Gunatilake were modified to receive a compressed data stream that includes a normal stream and a channel change stream for a same program, then the system of Gunatilake were be rendered unsuitable for its intended purpose which is prohibited under MPEP §2143.01V. That is, if the system of Gunatilake were modified to receive a compressed data stream that includes a normal stream and a channel change stream for a same program, the system of Gunatilake would no longer be able to provide a user with a way to quickly assess whether or not to wait for a full-frame presentation to be decoded from that (newly selected) channel in real-time (see, e.g., Gunatilake, paras. [0023] and [038]) since the retrieved I-frame from the buffer 315 in such a case would be for the same program that the user is currently watching and, hence, could even be the same frame altogether. In any event, the I-frame would be for the same program that the user is already watching and hence "knows about", thus rendering the invention of Gunatilake unsuitable for its intended purpose. Hence, the cited combination involving Gunatilake is impermissible under MPEP §2143.01V and should be withdrawn accordingly.

Moreover, assuming arguendo that the system of Gunatilake were modified to receive a compressed data stream that includes a normal stream and a channel change stream for a same program, then the proposed modification would result in a change in the principle of operation of Gunatilake which is prohibited under MPEP §2143.01VI. In particular, MPEP §2143.01VI sets forth the following: "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." Here, the principle of operation of Gunatilake involves, during the watching of a particular program, concurrently obtaining I-frames

from different (i.e., other) programs in anticipation of a channel change. Hence, the use by Gunatilake of an essentially redundant stream corresponding to the same program (analogous to the limitations recited in Claims 2 and 5) would, hence, change the principle of operation of Gunatilake which involves processing data from different programs (and again noting that no benefit can be derived from the system of Gunatilake using only program data for the same program given its reliance on program data for different programs). Thus, the cited combination involving Gunatilake is impermissible under MPEP §2143.01VI and should be withdrawn accordingly.

Also, we note that Claims 2 and 5 recite a (single) "multiplexer for receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program" (emphasis added). In contrast, while Gunatilake discloses multiple demultiplexers (304 and 307), none of the demultiplexers disclosed in Gunatilake ever separate a normal stream and a channel change stream from compressed stream data provided to such multiplexers.

Also, noting again that Claims 2 and 5 are explicitly directed to a video decoder, we further note that Claims 2 and 5 explicitly recite, *inter alia*, "at least one normal frame store in signal communication with the normal decoding portion for storing reference pictures for use in decoding inter-coded pictures". However, in direct contrast to the preceding explicit limitations of Claims 2 and 5, Gunatilake discloses, as cited by the Examiner, a memory (315) external to the decoder (304) shown in Figure 3 of Gunatilake. Hence, in that regard alone (i.e.., that the memory (315) is external to the decoder 304 and not comprised within a decoder), Gunatilake fails to teach or suggest the preceding limitations of Claims 2 and 5, instead directly teaching

away from the same.

Hence, in all these regards, Gunatilake fails to teach or suggest all the above reproduced limitations of Claims 2 and 5. Moreover, Brooks fails to cure the deficiencies of Gunatilake, and is silent regarding the same.

Thus, none of the cited references, either taken singly or in any combination, teach or suggest all of the above reproduced limitations of Claims 2 and 5, and a proper *prima facie* obviousness rejection has not been made.

Accordingly, Claims 2 and 5 are patentably distinct and non-obvious over the cited references for at least the reasons set forth above. Therefore, reversal of the rejection of Claims 2 and 5 is earnestly requested.

D. Whether Claim 3 is Unpatentable Under 35 U.S.C. §103(a) by U.S. Patent Pub. No. 2004/0194134 to Gunatilake et al. in view of U.S. Patent No. 7,675,972 to Laksono et al.

The failure of an asserted combination to teach or suggest each and every feature of a claim remains fatal to an obviousness rejection under 35 U.S.C. § 103. Section 2143.03 of the MPEP requires the "consideration" of every claim feature in an obviousness determination. To render a claim unpatentable, however, the Office must do more than merely "consider" each and every feature for this claim. Instead, the asserted combination of the patents must also teach or suggest *each and every claim feature*. *See In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (emphasis added) (to establish *prima facie* obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art). Indeed, as the Board of Patent

Appeal and Interferences has recently confirmed, a proper obviousness determination requires that an Examiner make "a searching comparison of the claimed invention - *including all its limitations* - with the teaching of the prior art." *See In re Wada and Murphy*, Appeal 2007-3733, *citing In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis in original). "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious" (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The Examiner rejected Claim 3 as being unpatentable over by U.S. Patent Pub. No. 2004/0194134 to Gunatilake et al. (hereinafter "Gunatilake" in short) in view of U.S. Patent No. 7,675,972 to Laksono et al. (hereinafter "Laksono" in short). The Examiner contends that the cited combination shows all the limitations recited in Claim 3.

Gunatilake is directed to a "method and system for rapid channel change providing stored images of current channel programs" (Gunatilake, Title). In further detail, Gunatilake discloses in the abstract, the following:

> Disclosed is a method for changing channels in a digital television transport stream, which comprises accessing the digital television transport stream, itself comprising a plurality of multiplexed channels, by using a first tuner, displaying a first program channel from the digital television transport stream, detecting and storing in a buffer memory recent video data from a second channel while displaying the first channel by using a second tuner, immediately recalling and presenting a complete video frame from the stored video data of the second channel for display when the second channel is selected by the user, and

displaying real-time video from the second channel when decodable real-time video data is available from the transport stream.

Laksono directed to a "system and method for multiple channel video transcoding" (Laksono, Title). In further detail, Laksono discloses in the abstract, the following:

> A system and a method for transcoding multiple media channels is disclosed herein. The system includes a first processor to parse a media data stream having one or more media data channels and a vector processor to decompress, scale, and then compress the parsed media channel. A parsed media data channel, in one embodiment, is accessed using a bit manipulator and packetized into decoder instruction packets and transmitted to the vector processor using a sequencer. The vector processor decompresses the decoder instruction packets, scales a macroblock generated from the packets, and then compresses the scaled macroblock. As a result, the scaled and compressed output has less data associated with the media channel, allowing for faster and/or more efficient storage or transmission. A reduced sized scale buffer is associated with another disclosed embodiment.

It will be shown that the limitations of Claim 3 reproduced herein are not taught or suggested by the cited references (alone or in combination), and that such Claim should be allowed including those dependent there from.

D1. Claim 3

Initially, it is respectfully noted that Claim 3 directly depends from independent Claim 1. Thus, Claim 3 includes all the limitations of Claim 1.

It is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claim 3 (with the following applicable to Claim 3 by virtue of its respective dependency from Claim 1):

> 1. A video decoder for receiving compressed stream data and providing decompressed video output, the decoder comprising:
>
> a demultiplexor for receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program;
>
> a normal decoding portion in direct signal communication with the demultiplexor for selectably receiving at least one of the compressed normal and channel change streams, and providing decompressed video output; and
>
> at least one normal frame store in signal communication with the normal decoding portion for storing reference pictures for use in decoding inter-coded pictures.

Initially, we will focus on the following language recited in Claim 3: "receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program". Against the preceding limitations of Claim 3, the Examiner cited elements 304, 301, 302, and 309 in figure 3 of Gunatilake as well as paragraph [0036], lines 3-10 and 13-14, and paragraph [0038]. We respectfully disagree with the Examiner's reading of Gunatilake and subsequent application of the same to the pending claims.

Paragraph [0036] of Gunatilake discloses the following in its entirety:

FIG. 3 illustrates, in block diagram form, a receiver system in accordance to an embodiment of the present invention. There, channel cache architecture 300 is characterized by receiving a television signal, 301, containing encoded, multiplexed, digital television programming. It is noted here that a received signal containing digital television programming may be a broadcast radio frequency (RF) signal, a cable signal, or any other signal arriving from anywhere other than internally to the receiver involved in this embodiment of the present invention. The input signal is received by a tuner 302 if RF or otherwise appropriately accessed and digital transport stream 303 is separated out. The desired program channel is demultiplexed and decoded at 304 and sent to display 106. In this embodiment, a second tuner, 305, also separates out a digital transport stream 303. It is noted here that, in some embodiments of the present invention, the functions of tuners 302 and 305 can be switched, do that either tuner may be the “watched” tuner and the other may be the “unused” tuner. In other embodiments, there can be more tuners which can also be either "watched" or "unused" tuners.

Paragraph [0038] of Gunatilake discloses the following in its entirety:

At the same time the new full video frame still image is obtained from cache i and sent to the display, channel change and cache manager 309, via command and control 310, instructs MPEG decoder 304 to begin decoding real-time video for the newly selected program channel i in transport stream 303. If the user remains tuned to the newly selected channel i, real-time video is then displayed immediately as soon as full-frame, real-time video is available. Using this method, the user can immediately see, by viewing the full video frame still image (which is characteristic of the current programming), whether the newly

> selected program channel is one he or she may want to view without having to wait for real-time video decoding to commence, which can take several seconds to occur. Moreover, the still image obtained from the cache 315 may function adequately for surfing purposes where a decision to view or not may be made from the stored still image.

Before specifically addressing the preceding portions of Gunatilake, we provide a brief overview of Gunatilake in order to show the disparities between the approach of Gunatilake with respect to the inventions represented by Claim 3.

Gunatilake is directed to "a method for changing channels in a digital television transport stream, which comprises accessing the digital television transport stream, itself comprising a plurality of multiplexed channels" (Gunatilake, abstract). To that end, Gunatilake discloses a system that includes, *inter alia*, multiple demultiplexers (see, e.g., Gunatilake, FIG. 3, elements 302 and 305) and multiple tuners (see, e.g., Gunatilake, FIG. 3, elements 304 and 307). A first one 302 (i.e., a "watched" tuner) of the tuners tunes to a currently watched program with the attached demux 302 separating the currently watched program from the plurality of multiplexed channels (i.e., multiplexed programs) (see, e.g., Gunatilake, para. [0036]). One or more other tuners 305 (i.e., "unused" tuners) periodically scan the transport stream for video data in each program channel in conjunction with another demultiplexer 307 attached thereto, with such video data forming I-frames of unwatched programs that are stored in a memory 315 (having a separate buffer for each channel in the transport stream). The stored I-frame for a given program is then displayed to a user upon the user providing a channel change command for the given program (see, e.g., Gunatilake, para. [0038]). "Using this method, the user can immediately see, by viewing the full video frame still

image (which is characteristic of the … [newly requested programming] programming), whether the newly selected program channel is one he or she may want to view without having to wait for real-time video decoding to commence, which can take several seconds to occur" (Gunatilake, para. [0038]).

Hence, in direct contrast to the explicit limitations in Claim 3, it is clear that the system of Gunatilake does NOT separate a normal stream and a channel change stream from a compressed data stream, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program. Rather, Gunatilake separates different channel streams from a transport stream, where each channel stream corresponds to a different program (see, e.g., Gunatilake, para. [0034], disclosing "[e]ach time step 230 is entered, the second video channel tuner selects a new program"). We note that the preceding recited separating of the normal stream and the channel change stream from the compressed data stream clearly pre-supposes that both the normal stream and the channel change stream are contained within the compressed data stream, which is not taught nor suggested by Gunatilake who instead teaches away from the same.

Accordingly, not only does Gunatilake fail to teach or suggest "separating a normal stream and a channel change stream from a compressed data stream, the normal stream and the channel change … comprising a plurality of pictures for a same program" as explicitly recited in Claim 3, Gunatilake also fails to teach or suggest receiving a compressed stream data that includes both a normal stream and a channel change stream. In fact, it is readily clear to one of ordinary skill in the art that Gunatilake has no need for a compressed data stream having a normal stream and a channel change stream that both comprise a plurality of pictures for a same program, in contrast to the

explicit limitations of Claim 3, since the system of Gunatilake exploits the different pictures that correspond to different programs in order to provide the user a way to quickly assess the content of a different program not currently being viewed using a pre-stored I-frame for that different program.

In fact, assuming arguendo that the system of Gunatilake were modified to receive a compressed data stream that includes a normal stream and a channel change stream for a same program, then the system of Gunatilake were be rendered unsuitable for its intended purpose which is prohibited under MPEP §2143.01V. That is, if the system of Gunatilake were modified to receive a compressed data stream that includes a normal stream and a channel change stream for a same program, the system of Gunatilake would no longer be able to provide a user with a way to quickly assess whether or not to wait for a full-frame presentation to be decoded from that (newly selected) channel in real-time (see, e.g., Gunatilake, paras. [0023] and [038]) since the retrieved I-frame from the buffer 315 in such a case would be for the same program that the user is currently watching and, hence, could even be the same frame altogether. In any event, the I-frame would be for the same program that the user is already watching and hence "knows about", thus rendering the invention of Gunatilake unsuitable for its intended purpose. Hence, the cited combination involving Gunatilake is impermissible under MPEP §2143.01V and should be withdrawn accordingly.

Moreover, assuming arguendo that the system of Gunatilake were modified to receive a compressed data stream that includes a normal stream and a channel change stream for a same program, then the proposed modification would result in a change in the principle of operation of Gunatilake which is prohibited under MPEP §2143.01VI. In particular, MPEP §2143.01VI sets forth the following: "If the proposed modification or combination of the prior art would change the

principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." Here, the principle of operation of Gunatilake involves, during the watching of a particular program, concurrently obtaining I-frames from different (i.e., other) programs in anticipation of a channel change. Hence, the use by Gunatilake of an essentially redundant stream corresponding to the same program (analogous to the limitations recited in Claim 3) would, hence, change the principle of operation of Gunatilake which involves processing data from different programs (and again noting that no benefit can be derived from the system of Gunatilake using only program data for the same program given its reliance on program data for different programs). Thus, the cited combination involving Gunatilake is impermissible under MPEP §2143.01VI and should be withdrawn accordingly.

Also, we note that Claim 3 recites a (single) "multiplexer for receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program" (emphasis added). In contrast, while Gunatilake discloses multiple demultiplexers (304 and 307), none of the demultiplexers disclosed in Gunatilake ever separate a normal stream and a channel change stream from compressed stream data provided to such multiplexers.

Also, noting again that Claim 3 is explicitly directed to a video decoder, we further note that Claim 3 explicitly recites, *inter alia*, "at least one normal frame store in signal communication with the normal decoding portion for storing reference pictures for use in decoding inter-coded pictures". However, in direct contrast to the preceding explicit limitations of Claim 3, Gunatilake discloses, as cited by the Examiner, a memory (315) external to the

decoder (304) shown in Figure 3 of Gunatilake. Hence, in that regard alone (i.e.., that the memory (315) is external to the decoder 304 and not comprised within a decoder), Gunatilake fails to teach or suggest the preceding limitations of Claim 3, instead directly teaching away from the same.

Hence, in all these regards, Gunatilake fails to teach or suggest all the above reproduced limitations of Claim 3. Moreover, Laksono fails to cure the deficiencies of Gunatilake, and is silent regarding the same.

Thus, none of the cited references, either taken singly or in any combination, teach or suggest all of the above reproduced limitations of Claim 3, and a proper *prima facie* obviousness rejection has not been made.

Accordingly, Claim 3 is patentably distinct and non-obvious over the cited references for at least the reasons set forth above. Therefore, reversal of the rejection of Claim 3 is earnestly requested.

E. Whether Claim 9 is Unpatentable Under 35 U.S.C. §103(a) by U.S. Patent Pub. No. 2004/0194134 to Gunatilake et al. in view of U.S. Patent No. 6,118,498 to Reitmeier

The failure of an asserted combination to teach or suggest each and every feature of a claim remains fatal to an obviousness rejection under 35 U.S.C. § 103. Section 2143.03 of the MPEP requires the "consideration" of every claim feature in an obviousness determination. To render a claim unpatentable, however, the Office must do more than merely "consider" each and every feature for this claim. Instead, the asserted combination of the patents must also teach or suggest *each and every claim feature*. *See In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA

1974) (emphasis added) (to establish *prima facie* obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art). Indeed, as the Board of Patent Appeal and Interferences has recently confirmed, a proper obviousness determination requires that an Examiner make "a searching comparison of the claimed invention - *including all its limitations* - with the teaching of the prior art." *See In re Wada and Murphy*, Appeal 2007-3733, *citing In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis in original). "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious" (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The Examiner rejected Claim 9 as being unpatentable over by U.S. Patent Pub. No. 2004/0194134 to Gunatilake et al. (hereinafter "Gunatilake" in short) in view of U.S. Patent No. 6,118,498 to Reitmeier. The Examiner contends that the cited combination shows all the limitations recited in Claim 9.

Gunatilake is directed to a "method and system for rapid channel change providing stored images of current channel programs" (Gunatilake, Title). In further detail, Gunatilake discloses in the abstract, the following:

> Disclosed is a method for changing channels in a digital television transport stream, which comprises accessing the digital television transport stream, itself comprising a plurality of multiplexed channels, by using a first tuner, displaying a first program channel from the digital television transport stream, detecting and storing in a buffer memory recent video data from a second channel while displaying the first channel by using a second tuner, immediately recalling and presenting a complete video frame from the stored video data of the

second channel for display when the second channel is selected by the user, and displaying real-time video from the second channel when decodable real-time video data is available from the transport stream.

Reitmeier is directed to a "channel scanning and channel change latency reduction in an ATSC television receiver" (Reitmeier, Title). In further detail, Reitmeier discloses in the abstract, the following:

> A method and apparatus for masking program selection latency in an MPEG-like information stream receiver, such as an ATSC or DVB television receiver. An information stream receiver receives VSB- or QAM-modulated signals comprising an MPEG-like system streams including program transport streams. In a channel scanning mode of operation, a plurality of identified program transport streams (i.e., channels) are sequentially retrieved from one or more system streams. A portion of each retrieved program transport stream, such as an intra-frame encoded video frame within an included elementary video stream, is extracted and stored in a memory. In a channel changing mode of operation, if a desired channel is one of the sequentially scanned channels, then the stored I-frame is retrieved and coupled to a decoder while the desired channel is re-acquired by tuning, demodulating, and demultiplexing operations. In this manner, the inherent latency of the tuning, demodulating, and demultiplexing operations are somewhat masked. Moreover, by storing tuning and demodulation parameters associated with an anticipated "next" channel, the actual time required to retrieve that channel is reduced.

It will be shown that the limitations of Claim 9 reproduced herein are not taught or suggested by the cited references (alone or in combination), and that such Claim should be allowed including those dependent there from.

E1. Claim 9

Initially, it is respectfully noted that Claim 9 directly depends from independent Claim 1. Thus, Claim 9 includes all the limitations of Claim 1.

It is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claim 9 (with the following applicable to Claim 9 by virtue of its respective dependency from Claim 1):

> 1. A video decoder for receiving compressed stream data and providing decompressed video output, the decoder comprising:
>
> a demultiplexor for receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program;
>
> a normal decoding portion in direct signal communication with the demultiplexor for selectably receiving at least one of the compressed normal and channel change streams, and providing decompressed video output; and
>
> at least one normal frame store in signal communication with the normal decoding portion for storing reference pictures for use in decoding inter-coded pictures.

Initially, we will focus on the following language recited in Claim 9: "receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program". Against the preceding limitations of Claim 9, the Examiner cited elements 304, 301, 302, and 309 in figure 3 of Gunatilake as well as paragraph [0036], lines 3-10 and 13-14, and paragraph [0038]. We respectfully disagree with the Examiner's reading of Gunatilake and subsequent application of the same to the pending claims.

Paragraph [0036] of Gunatilake discloses the following in its entirety:

> FIG. 3 illustrates, in block diagram form, a receiver system in accordance to an embodiment of the present invention. There, channel cache architecture 300 is characterized by receiving a television signal, 301, containing encoded, multiplexed, digital television programming. It is noted here that a received signal containing digital television programming may be a broadcast radio frequency (RF) signal, a cable signal, or any other signal arriving from anywhere other than internally to the receiver involved in this embodiment of the present invention. The input signal is received by a tuner 302 if RF or otherwise appropriately accessed and digital transport stream 303 is separated out. The desired program channel is demultiplexed and decoded at 304 and sent to display 106. In this embodiment, a second tuner, 305, also separates out a digital transport stream 303. It is noted here that, in some embodiments of the present invention, the functions of tuners 302 and 305 can be switched, do that either tuner may be the "watched" tuner and the other may be the "unused" tuner. In other embodiments, there can be more tuners which can also be either "watched" or "unused" tuners.

Paragraph [0038] of Gunatilake discloses the following in its entirety:

> At the same time the new full video frame still image is obtained from cache i and sent to the display, channel change and cache manager 309, via command and control 310, instructs MPEG decoder 304 to begin decoding real-time video for the newly selected program channel i in transport stream 303. If the user remains tuned to the newly selected channel i, real-time video is then displayed immediately as soon as full-frame, real-time video is available. Using this method, the user can immediately see, by viewing the full video frame still image (which is characteristic of the current programming), whether the newly selected program channel is one he or she may want to view without having to wait for real-time video decoding to commence, which can take several seconds to occur. Moreover, the still image obtained from the cache 315 may function adequately for surfing purposes where a decision to view or not may be made from the stored still image.

Before specifically addressing the preceding portions of Gunatilake, we provide a brief overview of Gunatilake in order to show the disparities between the approach of Gunatilake with respect to the inventions represented by Claim 9.

Gunatilake is directed to "a method for changing channels in a digital television transport stream, which comprises accessing the digital television transport stream, itself comprising a plurality of multiplexed channels" (Gunatilake, abstract). To that end, Gunatilake discloses a system that includes, *inter alia*, multiple demultiplexers (see, e.g., Gunatilake, FIG. 3, elements 302 and 305) and multiple tuners (see, e.g., Gunatilake, FIG. 3, elements 304 and 307). A first one 302 (i.e., a "watched" tuner) of the tuners tunes to a currently watched program with the attached demux

302 separating the currently watched program from the plurality of multiplexed channels (i.e., multiplexed programs) (see, e.g., Gunatilake, para. [0036]). One or more other tuners 305 (i.e., "unused" tuners) periodically scan the transport stream for video data in each program channel in conjunction with another demultiplexer 307 attached thereto, with such video data forming I-frames of unwatched programs that are stored in a memory 315 (having a separate buffer for each channel in the transport stream). The stored I-frame for a given program is then displayed to a user upon the user providing a channel change command for the given program (see, e.g., Gunatilake, para. [0038]). "Using this method, the user can immediately see, by viewing the full video frame still image (which is characteristic of the … [newly requested programming] programming), whether the newly selected program channel is one he or she may want to view without having to wait for real-time video decoding to commence, which can take several seconds to occur" (Gunatilake, para. [0038]).

Hence, in direct contrast to the explicit limitations in Claim 9, it is clear that the system of Gunatilake does NOT separate a normal stream and a channel change stream from a compressed data stream, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program. Rather, Gunatilake separates different channel streams from a transport stream, where each channel stream corresponds to a different program (see, e.g., Gunatilake, para. [0034], disclosing "[e]ach time step 230 is entered, the second video channel tuner selects a new program"). We note that the preceding recited separating of the normal stream and the channel change stream from the compressed data stream clearly pre-supposes that both the normal stream and the channel change stream are

contained within the compressed data stream, which is not taught nor suggested by Gunatilake who instead teaches away from the same.

Accordingly, not only does Gunatilake fail to teach or suggest "separating a normal stream and a channel change stream from a compressed data stream, the normal stream and the channel change ... comprising a plurality of pictures for a same program" as explicitly recited in Claim 9, Gunatilake also fails to teach or suggest receiving a compressed stream data that includes both a normal stream and a channel change stream. In fact, it is readily clear to one of ordinary skill in the art that Gunatilake has no need for a compressed data stream having a normal stream and a channel change stream that both comprise a plurality of pictures for a same program, in contrast to the explicit limitations of Claim 9, since the system of Gunatilake exploits the different pictures that correspond to different programs in order to provide the user a way to quickly assess the content of a different program not currently being viewed using a pre-stored I-frame for that different program.

In fact, assuming arguendo that the system of Gunatilake were modified to receive a compressed data stream that includes a normal stream and a channel change stream for a same program, then the system of Gunatilake were be rendered unsuitable for its intended purpose which is prohibited under MPEP §2143.01V. That is, if the system of Gunatilake were modified to receive a compressed data stream that includes a normal stream and a channel change stream for a same program, the system of Gunatilake would no longer be able to provide a user with a way to quickly assess whether or not to wait for a full-frame presentation to be decoded from that (newly selected) channel in real-time (see, e.g., Gunatilake, paras. [0023] and [038]) since the retrieved I-frame from the buffer 315 in such a case would be for the same program that the user is currently watching and, hence, could even be the same frame altogether. In any event, the I-frame would be

for the same program that the user is already watching and hence "knows about", thus rendering the invention of Gunatilake unsuitable for its intended purpose. Hence, the cited combination involving Gunatilake is impermissible under MPEP §2143.01V and should be withdrawn accordingly.

Moreover, assuming arguendo that the system of Gunatilake were modified to receive a compressed data stream that includes a normal stream and a channel change stream for a same program, then the proposed modification would result in a change in the principle of operation of Gunatilake which is prohibited under MPEP §2143.01VI. In particular, MPEP §2143.01VI sets forth the following: "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." Here, the principle of operation of Gunatilake involves, during the watching of a particular program, concurrently obtaining I-frames from different (i.e., other) programs in anticipation of a channel change. Hence, the use by Gunatilake of an essentially redundant stream corresponding to the same program (analogous to the limitations recited in Claim 9) would, hence, change the principle of operation of Gunatilake which involves processing data from different programs (and again noting that no benefit can be derived from the system of Gunatilake using only program data for the same program given its reliance on program data for different programs). Thus, the cited combination involving Gunatilake is impermissible under MPEP §2143.01VI and should be withdrawn accordingly.

Also, we note that Claim 9 recites a (single) "multiplexer for receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and

comprising a plurality of pictures for a same program" (emphasis added). In contrast, while Gunatilake discloses multiple demultiplexers (304 and 307), none of the demultiplexers disclosed in Gunatilake ever separate a normal stream and a channel change stream from compressed stream data provided to such multiplexers.

Also, noting again that Claim 9 is explicitly directed to a video decoder, we further note that Claim 9 explicitly recites, *inter alia*, "at least one normal frame store in signal communication with the normal decoding portion for storing reference pictures for use in decoding inter-coded pictures". However, in direct contrast to the preceding explicit limitations of Claim 9, Gunatilake discloses, as cited by the Examiner, a memory (315) external to the decoder (304) shown in Figure 3 of Gunatilake. Hence, in that regard alone (i.e.., that the memory (315) is external to the decoder 304 and not comprised within a decoder), Gunatilake fails to teach or suggest the preceding limitations of Claim 9, instead directly teaching away from the same.

Hence, in all these regards, Gunatilake fails to teach or suggest all the above reproduced limitations of Claim 9. Moreover, Reitmeier fails to cure the deficiencies of Gunatilake, and is silent regarding the same.

Thus, none of the cited references, either taken singly or in any combination, teach or suggest all of the above reproduced limitations of Claim 9, and a proper *prima facie* obviousness rejection has not been made.

Accordingly, Claim 9 is patentably distinct and non-obvious over the cited references for at least the reasons set forth above. Therefore, reversal of the rejection of Claim 9 is earnestly requested.

F. Conclusion

At least the above-identified limitations of the pending claims are not described, disclosed, nor suggested by the contents of the Gunatilake, Brooks, Laksono, and Reitmeier references and that of the mentioned well-known prior art, considered alone or in combination. Consequently, all of the anticipation and obviousness rejections constructed by the Examiner are improper and *prima facie* deficient.

Accordingly, it is respectfully requested that the Board reverse the rejections of independent Claims 1-11 under 35 U.S.C. §102(e), and 35 U.S.C. §103(a).

No fee is believed due since the payment for the fee for filing an Appeal Brief had been previously paid with the filing of the prior brief filed on February 21, 2011. However, in the event of any non-payment or improper payment of a required fee, the Commissioner is authorized to charge **Deposit Account No. 07-0832** as required to correct the error.

Respectfully submitted,

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8. CLAIMS APPENDIX

1. (previously presented) A video decoder for receiving compressed stream data and providing decompressed video output, the decoder comprising:

a demultiplexor for receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program;

a normal decoding portion in direct signal communication with the demultiplexor for selectably receiving at least one of the compressed normal and channel change streams, and providing decompressed video output; and

at least one normal frame store in signal communication with the normal decoding portion for storing reference pictures for use in decoding inter-coded pictures.

2. (previously presented) A video decoder as defined in Claim 1, further comprising:

a lower-resolution decoding portion in signal communication with the demultiplexor for receiving the compressed channel change stream;

at least one channel change frame store in signal communication with the lower-resolution decoding portion for storing reference pictures;

an upsampling unit in signal communication with the lower-resolution decoding portion for upsampling decompressed video data and selectably outputting said data to at least one of the at least one normal frame store and a display.

3. (previously presented) A video decoder as defined in Claim 1, further comprising a postprocessing filter in signal communication with the normal decoding portion for postprocessing decompressed video data and selectably outputting said data to at least the at least one normal frame store.

4. (original) A video decoder as defined in Claim 1, further comprising means for selecting a compressed picture to decode from one of a normal stream and a channel change stream.

5. (original) A video decoder as defined in Claim 4, further comprising means for upsampling lower resolution channel change stream pictures.

6. (previously presented) A video decoder as defined in Claim 1, further comprising means for decoding redundant picture syntax in compliance with the JVT/H.264/MPEG AVC compression standard.

7. (original) A video decoder as defined in Claim 1, further comprising means for decoding channel change pictures from user data of corresponding normal stream pictures.

8. (original) A video decoder as defined in Claim 1, further comprising means for responding to a signal from an encoder indicating whether to use normal stream or channel change stream pictures for subsequent channel change stream intra-coded pictures.

9. (original) A video decoder as defined in Claim 4, further comprising means for postprocessing the output of the normal decoder to reduce the abruptness of a transition from lower-quality to normal quality output.

10. (previously presented) In a video decoder, a video decoding method for receiving compressed stream data and providing decompressed video output, the method comprising:

receiving the compressed stream data and separating a normal stream and a channel change stream there from, the normal stream and the channel change stream each being generated external to the video decoder and comprising a plurality of pictures for a same program;

receiving at least one of the compressed normal and channel change streams, and providing decompressed video output; and

storing reference pictures for use in decoding inter-coded pictures.

11. (original) A video decoding method as defined in Claim 10, further comprising at least one of:

selecting a compressed picture to decode from one of a normal stream and a channel change stream;

upsampling lower resolution channel change stream pictures;

decoding redundant picture syntax in compliance with the JVT standard;

decoding channel change pictures from user data of corresponding normal stream pictures;

responding to a signal from an encoder indicating whether to use normal stream or channel change stream pictures for subsequent channel change stream intra-coded pictures; and

postprocessing the output of the normal decoder to reduce the abruptness of a transition from lower-quality to normal quality output.

12. (cancelled)

9. RELATED EVIDENCE APPENDIX

None.

10. RELATED PROCEEDINGS APPENDIX

None.